AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph [0023] with the following amended paragraph:

[0023] Referring to FIGS. 1-3, the present invention generally comprises a method of induction heat treatment 200 of a metal article 10 by means of an induction coil 100, and comprises the steps of: selecting 210 an article 10 for heat treatment having a longitudinal axis of rotation 12 and an outer surface 14 having an upper section ~~26~~ 22, a lateral section ~~27~~ 24 and a lower section ~~28~~ 26, and comprising a plurality of points, such as d_1 and d_2 as illustrated in FIGS. 5 and 6, having a plurality of normal spacings from the axis of rotation; selecting 220 an induction coil 100 comprising a semi-cylindrical upper coil portion 102, a semi-cylindrical lateral coil portion ~~104~~ 112, a semi-cylindrical lower coil portion ~~106~~ 114 and a longitudinal axis ~~108~~ 106, which is adapted to receive the article 10 for heat treatment and apply a non-planar magnetic field to the outer surface 14 of the article 10; placing 230 the article 10 within the induction coil 110; rotating 240 the article 10 within the induction coil 100 at a selected speed; energizing ~~240~~ 250 the induction coil 110 to apply the non-planar magnetic field and produce induction currents within the outer surface 14 of the article 10 for a time sufficient to induce heating of the outer surface 14 to a heat treatment temperature (T_H) to at least a selected case depth; and cooling ~~250~~ 260 the outer surface 14 of the article 10 to a temperature (T_C) to the selected case depth. The method of heat treatment 200, article 10, and induction coil 100 are described more particularly below.

Please replace paragraph [0029] with the following amended paragraph:

[0029] Having selected 210 inner race 10, the method of heat treatment 200 comprised the additional step of selecting 220 an induction coil 100. Referring to FIGS. 1 and 2, the induction coil 100 selected comprised a generally cylindrical coil 100 (see FIG. 1) having a generally cylindrical

~~portion 102~~ coil 110, a termination portion 104, and a longitudinal axis 106. Referring to FIG. 1, by generally cylindrical, it is meant that induction coil 100 and cylindrical coil ~~portion 102~~ 110 appear to be cylindrical as viewed from their top surfaces, and generally sweep out a cylindrical shape in space, as defined by inner surface 108. Generally cylindrical ~~portion 102~~ coil 110 comprises upper coil portion ~~110~~ 102, lateral coil portion 112 and lower coil portion 114. Upper coil portion ~~110~~ 102 comprises a first semi-cylindrical upper coil section 122 and a second semi-cylindrical upper coil section 130. Lateral coil portion 112 comprises a first semi-cylindrical lateral coil section 124 and a second semi-cylindrical lateral coil section 128. Lower coil portion 126 comprises a single semi-cylindrical section 126. As shown in FIGS. 1 and 2, termination portion 104 comprises a first termination section 120 and a second termination section 132. First and second termination section 120,132 are adapted to connect inductive coil 100 to a power supply. While the arrangement of elements is provided to illustrate an embodiment of inductor coil 100, the coil is not limited to the particular embodiment shown. For example, termination portion 104 could be incorporated into either of lateral portion ~~104~~ 112 or lower portion ~~106~~ 114, with a corresponding rearrangement of the other elements of induction coil 100. Referring again to FIGS. 1 and 2, induction coil 100 may comprise any suitable size, cross-sectional shape and composition, depending on the exact nature of article 10 that is to be used therewith. However, in the case of inner race 10, induction coil 100 had an effective diameter 134 of 73 mm and comprised a hollow, rectangular, pure copper tube 116 having an internal width of 10.4 mm and an internal height of 7.2 mm, and sidewall thickness of 1.1 mm. While many conductive materials may be used for induction coil 100, it is preferably made from pure copper tubing, generally having a purity of at least 99%. Induction coil 100 must be adapted so as to receive article 10, while preferably maintaining as close as spacing as is practicable, so as to maximize the inductive coupling with article 10 when induction coil is energized, and yet not interfere with the rotation of article 10, as discussed

below. Induction coil 100 is preferably adapted so that longitudinal axis 12 of article 10 may be easily aligned to be parallel to and coincident with longitudinal axis 106.

Please replace paragraph [0030] with the following amended paragraph:

[0030] Induction coil 100 is also adapted to apply a non-planar magnetic field to the outer surface 14. By non-planar, it is meant that the centerline of the magnetic field that results when induction coil 100 is energized, which roughly corresponds to the centerline of the tube, is non-planar. Referring to FIGS. 1 and 2, the magnetic field that is produced when induction coil 100 is energized may be described as being generally cylindrical as explained above. Induction coil 100 is adapted such that upper coil portion ~~110~~ 102, comprising first semi-cylindrical upper coil section 122 and second semi-cylindrical upper coil section 130, produces corresponding upper magnetic fields that are adapted to act on an upper section 22 of outer surface 14, and lateral coil portion 112, comprising first semi-cylindrical lateral coil section 124 and second semi-cylindrical lateral coil section 128, produces corresponding lateral magnetic fields that are adapted to act on lateral section 24 of outer surface 14, and lower coil portion 114, comprising a single semi-cylindrical section 126, produces a lower magnetic field that is adapted to act on lower section 26 of outer surface 14.

Please replace paragraph [0032] with the following amended paragraph:

[0032] The next step of method 200 comprises rotating 240 the inner race 10 within the induction coil 110 at a selected speed. This speed may be any suitable speed and may comprise a variable speed during or within the subsequent steps of method 200. Rotation is used to compensate for the fact that induction coil 100 has a region where termination portion 104 and ~~generally cylindrical~~ upper coil portion 102 meet where the resultant magnetic field is non-uniform and generally reduced as compared

to adjacent sections of the induction coil. Further, because the induction coil is non-planar, and applies distinct upper, lateral and lower magnetic fields, as described above, rotation is necessary in order that all of upper section 22, lateral section 24 and lower section 26 of outer surface 14 of article 10 are uniformly exposed to the corresponding magnetic fields when induction coil 100 is energized. In the case of inner race 10, inner race 10 was rotated at about 150 rpm during induction heat treatment 200.

Please replace paragraph [0033] with the following amended paragraph:

[0033] The next step of method 200 comprises energizing 250 the induction coil 100 to a selected energy level to apply the non-planar magnetic field and produce induction currents within outer surface 14 of article 10. To provide induction hardening, this step must be performed for a time sufficient to induce heating of outer surface 14 to a heat treatment temperature (T_H) to at least a selected case depth, such as the required or desired hardened case depth. As illustrated in FIGS. 1 and 2, in the case of inner race 10, and induction coil 100, the step of energizing ~~240~~ 250 comprised applying 30% power from a commercially available 400kW power supply of a type used for induction heat treatment in a range of about 7.5-15 kHz, and preferably about 10 kHz, for about 3.5 seconds. In the case of inner race 10, this step of energizing 250 was sufficient to heat all of outer surface 14 to a temperature that was above the austenite transition temperature to selected case depth of at least 1 mm over the entirety of outer surface 14. The austenite transition temperature for the AISI 1050 material is about 1700-2000 °F. The actual depth of the heat treatment ranged from about 1 – 1.8 mm in the ball race portions 34 and about 2.5 – 5 mm on bearing portions ~~30~~ 32. It will be readily understood that the inductive frequency and power can be altered depending on the size, shape, degree of irregularity, composition and other factors associated with article 10, the specific design of inductor coil 100, as well as other factors.

Please replace paragraph [0034] with the following amended paragraph:

[0034] The next step of method 200 comprises cooling 260 outer surface 14 of article 10 to a temperature (T_C) to the selected case depth. This temperature (T_C) can be any temperature that is lower than the heat treatment temperature (T_H), but typically will be selected to produce certain desired transformation products within case 20. In the case of inner race 10, the desired transformation product in case 20 was martensite, hence, T_C was selected to be below the martensite transformation temperature, which in the case of AISI 1050 was about 200°F. Cooling ~~250~~ 260 comprised quenching inner race 10 in an aqueous quenchant comprising 3-5% Aqua Quench 251, for a time sufficient to lower inner race 10 below T_C. Quenching was accomplished by pumping a large volume of the quenchant onto the part. Quenching ~~250~~ 260 was accomplished using standard quench blocks ~~150~~ having numerous spray holes in the surfaces facing induction coil 100. The quench time for inner race 10 was about 15 seconds at a flow rate of about 15-20 gpm.

Please replace paragraph [0035] with the following amended paragraph:

[0035] Referring to FIGS. 5 and 6, following the step of cooling ~~250~~ 260, the surface hardness of inner race 10 at outer surface 14 was in the range of R_C 58-63, with a hardened case 20 depth range of approximately 1.0-5.0 mm effective at R_C 50, and a core 16 hardness of R_C 15-30. The microstructure comprised martensite in outer surface 14 and case 20, and fine grains of pearlite and ferrite in core 16. Bearing surfaces 30 and their associated bearing portions 32 of case 20, having a hardened case depth of about 2.5-5.0 mm, and ball race surfaces 34 and their associated ball race portions 36 of case 20 having a hardened case depth of about 1-1.8 mm.